

PROCEEDINGS  
OF THE  
BIOLOGICAL SOCIETY OF WASHINGTONA NEW CRAWFISH OF THE CRISTATUS SECTION  
OF THE GENUS *CAMBARUS* FROM MISSISSIPPI  
(DECAPODA, ASTACIDAE)<sup>1</sup>

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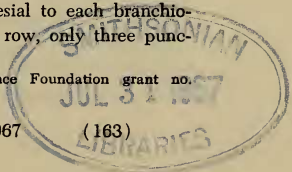
The species described below is assigned to the *Cristatus* Section (Hobbs, 1955: 98) of the crawfish genus *Cambarus*. It is compatible with the diagnosis of the Section as given by Hobbs (1966: 109), except that the areola is longer (upper limits: Hobbs, 1966, 35.5% length of carapace; *valleculus*, 38.7%). The other two species in the Section are in the Tombigbee River watershed; the new species is in the upper Pearl River watershed.

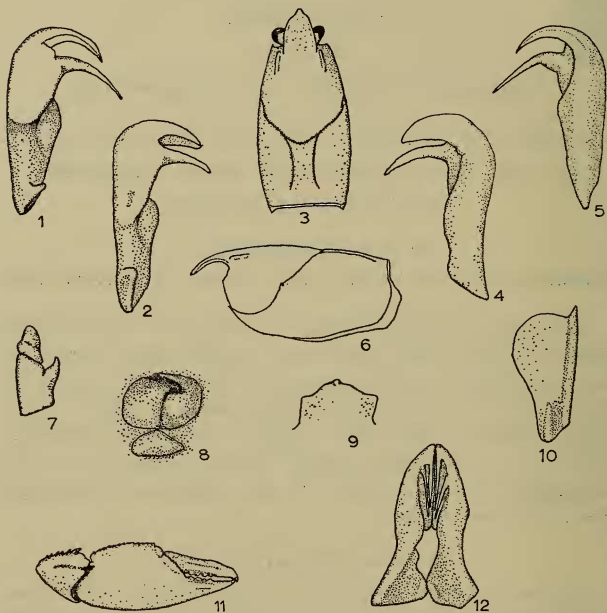
***Cambarus valleculus* new species**

*Diagnosis:* Rostrum subplane or slightly excavate, subspatulate, without marginal spines or tubercles. Areola 4.75-3.31 (avg. 4.20) times longer than broad, constituting 32.2-28.7 (avg. 34.2) per cent of entire carapace length. Suborbital angle much reduced. Antennal scale more than one-half as broad as long. Chela with cristiform row of tubercles along mesial margin of palm. First pleopod of male with central projection directed at approximately 105-degree angle to main shaft of appendage; mesial process slender, directed at 120-degree angle (approximately), extending caudad almost half its length beyond tip of central projection. Pleopods slightly asymmetrical (Fig. 12). Annulus ventralis subovoid with deep cephalic sinus that disappears in caudal half. (Fig. 8).

*Holotypic male, Form I:* Body subovate, compressed laterally. Abdomen narrower than cephalothorax (8.0; 9.8 mm, respectively). Width of carapace less than depth in region of caudodorsal margin of cervical groove (9.8; 10.0 mm). Areola moderately broad (4.1 times longer than wide) with irregular row of punctations mesial to each branchio-cardiac groove and irregular median longitudinal row, only three punc-

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FIGS. 1-12. *Cambarus valleculeus*. 1, Mesial view of first pleopod of holotype; 2, Mesial view of first pleopod of morphotype; 3, Dorsal view of carapace of holotype; 4, Lateral view of first pleopod of morphotype; 5, Lateral view of first pleopod of holotype; 6, Lateral view of carapace of holotype; 7, Ischiopodite and basipodite of third pereopod of holotype; 8, Annulus ventralis of allotype; 9, Epistome of holotype; 10, Antennal scale of holotype; 11, Distal podomeres of cheliped of holotype; 12, Caudal view of first pleopods of paratypic first form male. (Setation and punctations removed from all figures.)

tations across narrowest part. Cephalic section of carapace 2.1 times as long as areola; areola 32.2 per cent of total length of cephalothorax. Rostrum 1.2 times longer than wide, subspatulate with tuberculate acumen, but lacking marginal spines, tubercles or angles, margins only slightly elevated; tip of rostrum reaching tip of distal end of peduncle of antennule; upper surface only slightly depressed, with few setiferous punctations; rostrum depressed cephalically (Fig. 6). Subrostral ridges weak, barely evident in dorsal aspect.

Postorbital ridges well developed; cephalic ends lacking tubercles or spines. Suborbital angle much reduced. Branchiostegal spine small but acute. Cervical spines and tubercles absent. Carapace moderately punctate dorsally and cephalolaterally. Abdomen longer than carapace (22.0, 20.5 mm). Cephalic section of telson with two acute spines in each caudolateral corner.

Epistome (Fig. 9) broader than long, subplane, with small cephalo-median tubercle. Antennules normal with small spine on lower surface of basal segment. Antennae reaching third abdominal segment. Antennal scale (Fig. 10) broadest near distal end, 1.75 times longer than wide, terminating distally in strong spine.

Chela (Fig. 11) with palm broad, only slightly inflated and somewhat depressed, length of inner margin of palm longer than width; upper surface of palmar area with scant scattered setiferous squamous tubercles; inner margin with cristiform row of 13 tubercles; lower surface punctate; fingers not gaping; upper and lower surfaces of both fingers with submedian ridge flanked by setiferous punctations, ridges of upper surfaces more prominent; tubercle on lower surface at base of dactyl; opposable margin of dactyl with four subequal tubercles along proximal three-fifths and crowded minute denticles in distal two-fifths; opposable margin of immovable finger with three subequal tubercles along proximal three-fifths and one smaller tubercle in penultimate position, distal two-fifths with crowded minute denticles; tubercles of immovable finger overlying tubercles of dactyl when margins opposed, but tip of dactyl overlying tip of immovable finger.

Carpus of cheliped longer than broad; grooved dorsally, with few setiferous punctations; inner margin with two proximomedian acute spines, two ventromedian acute spines at about one-third length distally; single strong acute spine at two-thirds length, and with two acute spines, one each just proximoventral and proximodorsal to aforementioned spine; lower surface with only stout tubercle on proximolateral margin. Merus with row of 13 small acute spines spaced equidistantly along entire lower mesial margin; lower lateral margin with irregularly spaced row of six subacute spines; all spines subequal in size; upper surface with row of eight small acute setiferous spines along proximal eight-tenths, and three larger subacute spines distally. Ischiopodite with cristiform row of three small tubercles.

Maxillipeds and coxae of third through fifth pereopods heavily setose. Ischiopodites of third pereopods with strong simple hooks; hooks extending proximally beyond bases of ischiopodites (Fig. 7). Sternal projections setiferous at bases of coxopodites as in other members of Section.

First pleopods slightly asymmetrical (Fig. 12), reaching to coxopodites of third pereopods when abdomen is flexed, lying deeply embedded between ventrally projecting sternal projections; distal portion terminating in two parts; central projection corneous, tip subacute, bent caudally

at angle of approximately 105 degrees to main shaft of appendage; mesial process non-corneous, slender, tapering from base to tip, directed caudad at angle of approximately 120 degrees, tip blunt, subparallel to central projection; mesial process markedly longer than central projection and extending beyond it at least half length of mesial process (Figs. 1, 5). Tips of pleopods directed slightly mesiad, in close approximation to tips of other pleopod when in normal position.

*Morphotypic male, Form II*: Differs from holotype in following respects: inner margin of palm equal in length to dactyl; carpus lacking spines just proximal to stout acute spine and with only one spine between acute spine and proximomedian pair; lower lateral margin of carpus with strong acute spine; areola 3.6 times longer than wide and 33.8 per cent of total length of cephalothorax; length of inner margin of palm equal to length of palm. First pleopod with both tips non-corneous, stouter, shorter, and less bent caudally; mesial process proportionally shorter; inobtrusive process at caudolateral base of central projection (Figs. 2, 4).

*Allotypic female*: Differs from holotype in following respects: carpus lacking spines just proximal to strong spine; lower lateral margin of carpus with strong acute spine.

Annulus ventralis movable, subovate; deep depression in cephalomedian portion extending obliquely in cephalic third; sinus originating in depression, extending across midline, recurving sharply to midline and there caudally, becoming shallower to become trough in caudal half; trough broadening in caudal portion and extending to caudal margin (Fig. 8).

*Measurements*: As follows (in mm):

	Holotype	Allotype	Morphotype
Carapace			
Height	10.0	10.2	9.6
Width	9.8	9.4	9.1
Length	20.5	22.3	21.0
Areola			
Length	6.6	7.2	7.1
Width	1.6	1.8	2.0
Rostrum			
Length	5.3	6.1	5.6
Width	4.4	4.4	4.3
Chela			
Palm length (inner margin)	7.7	5.1	6.5
Palm width	7.1	5.6	6.5
Palm length (outer margin)	16.5	11.6	14.0
Dactyl length	8.7	6.4	7.6

*Type-locality*: Small creek, 6.8 mi. S junction of State Routes 15 & 12 (Ackerman) on State Route 15, Choctaw County, Mississippi. This

creek flows through typical woodlands on the ridge dividing the Pearl and Tombigbee River drainages, and eventually flows into the former. The creek was about 4 feet wide and did not exceed 2 feet in depth; the banks were elevated about 20 inches above water level and were slightly undercut; the bottom was composed of sand, silt and small gravel, with sparse detritus and leaf litter; the flow was strong for a stream in this section of the state. Crawfishes were collected from the litter and from beneath the undercut banks. No burrows were observed.

Other crawfishes collected with *C. valleculus* at the type locality were immature specimens belonging to a species of the Blandingii Section of the genus *Procambarus*, possibly *P. a. acutus* (Girard, 1852). At other localities, the associates were *P. a. acutus*.

*Disposition of types:* The holotype, allotype, and morphotype are deposited in the United States National Museum (nos. 117963, 117964, and 117965, respectively). Topoparatypes are in the Museum of Comparative Zoology (1♂ I, 2♂♂ II; 2♀♀, 1♂ imm., 1♀ imm.), Tulane University (2♂♂ II; 2♀♀, 1♂ imm., 1♀ imm.), and the Mississippi State University Collections (1♂ I, 7♂♂ II, 8♀♀, 6♂♂ imm., 7♀♀ imm.). Other paratypes are deposited in the Ohio State Museum (1♂ II, 2♀♀, 2♂♂ imm., 2♀♀ imm.), and the M. S. U. Collections (2♂♂ II, 4♀♀, 11♂♂ imm.; 12♀♀ imm.).

*Variations:* Only slight variations in tubercular and spinose ornamentation of the cheliped were observed. The acumen was not present on a few specimens, but in these the rostrum seems damaged.

*Relationships:* *C. valleculus* is related most closely to *C. cristatus* Hobbs (1955: 95) and *C. prominens* Hobbs (1966: 110). It is similar to the latter in the degree of flexion of the tips of the first pleopod. The epistome and chela of *C. valleculus* differ from the other two species. The most distinguishing characteristics of the new species, however, are the unique annulus ventralis and the male first pleopod. The tips of the pleopod are longer and even more sharply bent caudad than in *C. prominens*. Too, the bend of the central projection is less sharp cephalically than in either of the other species, making the cephalic margin a smoother curve. In this latter respect *C. valleculus* is more similar to *C. cristatus* than *C. prominens*, but it is easily distinguished from the former by the greater bend of its tips and their greater length.

*Etymology:* The name of this species is taken from the Latin *vallecula*, a small valley; it is so named because of the "small valley" formed by sternal and pereopod modifications in which the pleopods of Cristatus Section crawfishes are carried.

*Remarks:* The slightly asymmetric pleopods of *C. valleculus* (Fig. 12) is an uncommon condition in *Cambarus*. This condition, however, is common in the Blandingii Section of *Procambarus*, from which genus *Cambarus* possibly arose.

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